**Electrical Circuits Summary Sheet**

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| **Circuit Elements and Diagrams – Circuit Elements are drawn in circuit diagrams** | |
| 1. **Batteries** supply voltage to drive electrons around the circuit. 2. **Wires** provide a low resistance (but not zero resistance) path for the electrons to flow in. 3. **Resistors** impede the flow of electrons. Greater resistance leads to reduced current. 4. **Capacitors** will not allow direct current to flow; they are used in circuits where current can change direction. 5. **Bulbs** are specialized resistors designed to glow when electrons flow through them. 6. **Switches** are used to start or stop the flow of electrons. | |
| **Voltage and Current** | |
| 1. **Voltage** is the electromotive force that drives the electrons to flow through a circuit. 2. The flow of electrons is a **current**. Current is defined as charge per unit time (q/t) and has units of Amperes (A). Electrons flow from the negative terminal of a battery to the positive terminal. 3. Everything else being equal, **greater voltage** will create **larger current**. 4. There are two kinds of current.    1. **Direct**: charges move around a circuit in the same direction all the time. Batteries provide direct current.    2. **Alternating**: charges change their direction of movement with time. Household wiring is alternating current. | **Current**: where q = charge, t = time  **Resistance**: V = voltage, I = current  **Ohm’s Law**:  **Electrical Power**: Watts (W) |
| **Resistor Wiring: resistors can be wired in series or in parallel or a combination of both** | |
| **Series**: Resistors wiring in series share the same current; that is, every resistor wired in series has the same current flowing through it. | **Parallel**: Resistors wiring in parallel share the same voltage; that is; every resistor wired in parallel has the same voltage across it. |